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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
Division of Forest Insect Investigations

FOREST INSECT CONDITIONS
YOSEMITE NATIONAL PARK
OCTOBER 1953
RECONNAISSANCE SURVEY

Introduction

A reconnaissance survey was conducted in the Yosemite National Park on October 12 and 13, 1953 by B. E. Wickman of the Forest Insect Laboratory. Areas examined included the pine belt from Mariposa Grove to Hetch Hetchy and recreational areas around Illilouette Creek, Bridalveil Creek, Mono Meadows, Glacier Point, Tenaya Lake and Tuolumne Meadows (see map). Methods of examination were road stripping and topographic spotting.

Special surveys of lodgepole needleminer damage, and mountain pine beetle damage were made earlier in the season. The entire Park was aerially surveyed earlier in the month.

Insect and Host Species

Important insects encountered and their host trees are as follows:

Common Name	Scientific Name	Host
Western pine beetle	Dendroctonus brevicomis Lec.	Ponderosa pine
Jeffrey pine beetle	D. jeffreyi Hopk.	Jeffrey pine
Mountain pine beetle	D. monticolae Hopk.	Sugar pine
Pine engravers	Ips spp.	Ponderosa pine
Lodgepole pine needleminer	Recurvaria milleri Busck.	Lodgepole pine
Fir engravers	Scolytus spp.	Red fir & White fir
Fir sawfly	Neodiprion spp	White fir

Status and Scope of Infestation

In the mixed conifer type along the western slopes of the Park, which includes the high-use areas of Mariposa Grove in Yosemite Valley, low endemic conditions prevail. It is estimated that no more than 100 ponderosa, Jeffrey, and sugar pines are currently infested and will need control. However, a few more ponderosa pine infested with western pine beetle will undoubtedly show up at a later date inasmuch as current fades

of some trees were just beginning at the time of the survey. Red fir and white fir stands in the Park are sustaining damage from a combination of mistletoe and fir engravers. This condition has been observed to be common throughout most of the true-fir belt of California this season. Particularly heavy damage was observed in Gin Flat - South Fork Tuolumne area and along the road from Chinquapin to Glacier Point. In the last-mentioned area white fir loss due to fir engravers was heavy but scattered.

White fir infested with white-fir sawfly was reported in the Crane Flat area during the summer, but the infestation was checked by a native virus which infested and killed the sawfly larvae before they cocooned. Little damage was sustained by the white fir, and the infestation is at present considered endemic.

Lodgepole pine over a wide area around Tenaya Lake, the Upper Tuolumne watershed and in Jack Main Canyon is heavily infested by the lodgepole pine needleminer. However, control by application of aerial spray was attempted on 11,000 acres of high-use recreational area in the Tenaya Lake-Tuolumne Meadows area. Because of the threat of widespread tree mortality, either as a direct result of defoliation or through buildup of mountain pine beetle populations in trees weakened by defoliation, this is considered the Park's most serious infestation at the present time. The gross acreage of the infestation as determined by aerial sketch mapping and reconnaissance on the ground approximates 45,000 acres.

Lodgepole pine stands in Conness Basin which have sustained severe needleminer defoliation were found to contain a center of mountain pine beetle infestation this summer. At the present this infestation is confined to mature trees within an area of 500 acres in size. An appraisal survey of this outbreak was made in August, which showed an average of 4.1 trees per acre currently infested. A report summarizing the results of this survey, and outlining recommendations for control has been prepared.1/

Values Threatened and Recommended Action

Recreational use of immeasurable value justifies special consideration in the control of forest insects in a National Park. With this in mind, the following direct control recommendations are made:

1. Pine bark beetles

Fell-peel-burn control for pine beetles has long been the standby in the region and continuation of this method of control in most cases is recommended. An aggressive salvage logging program is urged to supplement fell-peel-burn wherever possible. Correctly carried on, this method gives control benefits equal to fell-peel-burn at greatly reduced costs.

1/ Mountain Pine Beetle, Conness Basin, Yosemite National Park, August 1953, Appraisal Survey by R. C. Hall and B. E. Wickman

Consideration might also be given to the use of toxic oil sprays applied to the outside of peeled bark in cases in which the infested trees are too far from roads for salvage logging and high fire hazard makes fell-peel-burn hazardous to use. Broods of Jeffrey pine beetle and mountain pine beetle which lie in the inner bark can be controlled by direct application of toxic oil sprays. This method of control has been recommended to control the mountain pine beetle infestation in Conness Basin. It is probable that broods of the western pine beetle, in spite of their protected position in the outer bark, can be effectively controlled by liberal dosages, inasmuch as such a spray has been found to penetrate well into bark crevices and larval mines. It would be desirable to have a Bureau representative on hand if this technique is applied.

2. Fir engraver beetles

General control of the fir engraver beetle, because of the scattered nature of the infestation and doubtful value of control methods is not recommended.

3. Lodgepole ~~pine~~ needleminer

Additional experimental work with aerial sprays containing DDT should be undertaken against the lodgepole needleminer, if control measures applied this year prove to be successful. In the latter event, the spraying of a limited area not included in this year's control zone would be warranted to determine if it is possible to kill the larvae when they migrate to new needles next season. This migration would probably occur during early June.

Discussion

Inasmuch as the bark beetle loss in the Park other than that occurring in lodgepole pine appears to be practically at an irreducible minimum, benefits of maintenance control as recommended cannot be expected to be noticeably lasting; but they should minimize the possibility of a return to epidemic conditions. The operational phases of the needleminer control project were carried out successfully in September and if the insecticide proves to be effective, a more extensive control program should be planned for the summer of 1955, contingent upon the continuation of the needleminer outbreak.

Forest Insect Laboratory
Berkeley, California
October 22, 1953

Boyd E. Wickman
Supervisory Control Aid

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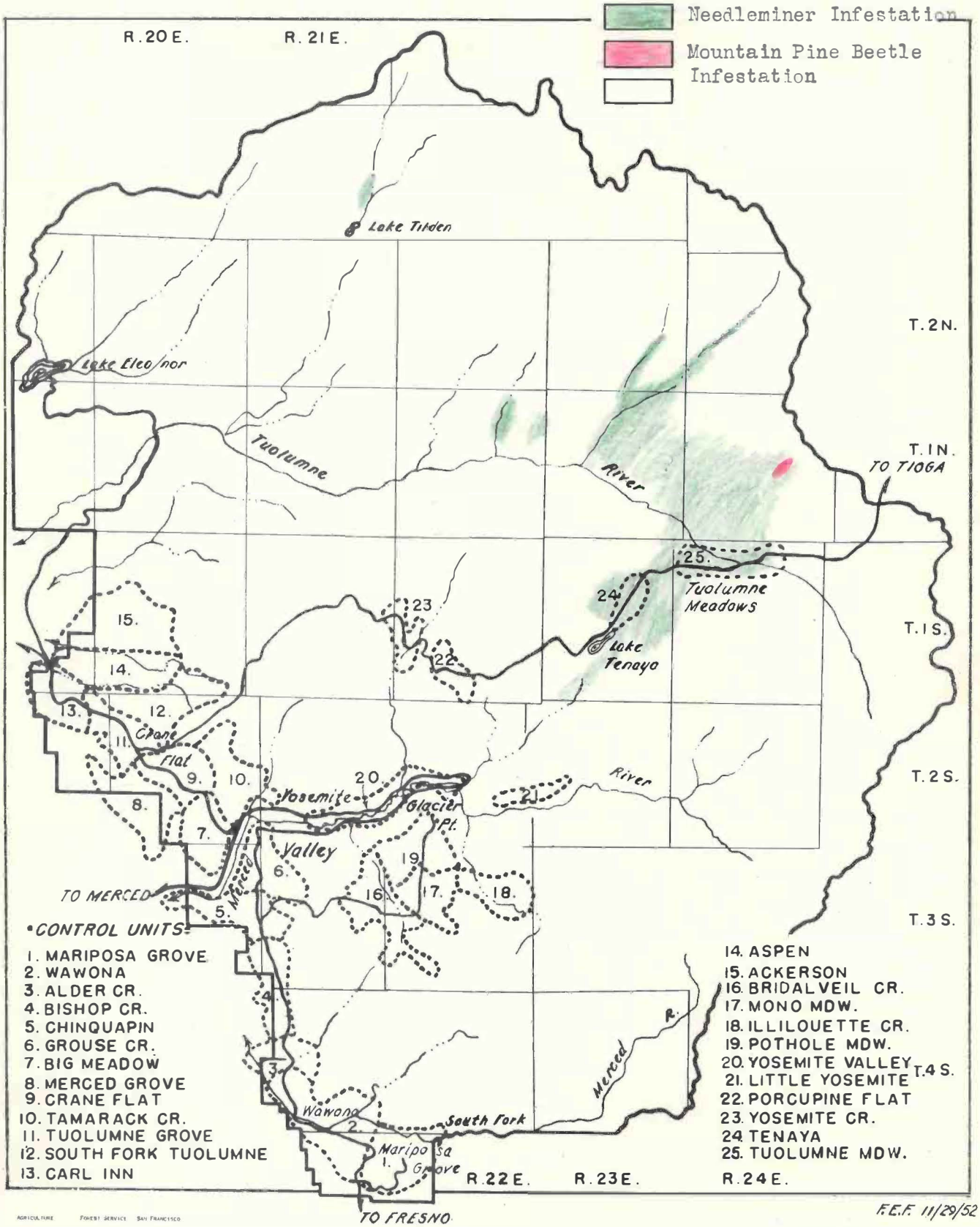
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
BERKELEY FOREST INSECT LABORATORY

YOSEMITE N.P. CAL.

SCALE
IN. 0 3 6 12 MI.

1953

LEGEND
PARK BOUNDARY
CONTROL UNIT BOUNDARY
Needleminer Infestation
Mountain Pine Beetle Infestation



•CONTROL UNITS

1. MARIPOSA GROVE
2. WAWONA
3. ALDER CR.
4. BISHOP CR.
5. CHINQUAPIN
6. GROUSE CR.
7. BIG MEADOW
8. MERCED GROVE
9. CRANE FLAT
10. TAMARACK CR.
11. TUOLUMNE GROVE
12. SOUTH FORK TUOLUMNE
13. CARL INN
14. ASPEN
15. ACKERSON
16. BRIDALVEIL CR.
17. MONO MDW.
18. ILLILOUETTE CR.
19. POTHOLE MDW.
20. YOSEMITE VALLEY
21. LITTLE YOSEMITE
22. PORCUPINE FLAT
23. YOSEMITE CR.
24. TENAYA
25. TUOLUMNE MDW.

AGRICULTURE FOREST SERVICE SAN FRANCISCO

F.E.F. 11/29/52